4.2 Airport Engineering

4.2.1 Introduction

4.2.1.1 History of civil aviation in Nepal

4.2.1.2 Role and functions of Ministry of Culture, Tourism and Civil Aviation (MoCTCA) and Civil Aviation Authority of Nepal

4.2.1.3 Role of International Civil Aviation Organization (ICAO)

4.2.1.4 The economic, political, and social roles of airports

4.2.2 **Airport Planning**

4.2.2.1 Planning consideration: Airport and airport systems, airport system planning, airport master plan and strategic plan, information required, preliminary feasibility, role of financing

4.2.2.2 Forecasting for planning purpose (Passenger, Aircraft, Cargo, Mail): Inventory and forecasting, factors affecting traffic growth, principles of forecasting, forecasting methods, accuracy and limitations of forecasting

4.2.2.3 Airport site evaluation: factors affecting airport location

4.2.2.4 Airside development: Physical characteristics runway, taxiway & apron, airport capacity and delay.

4.2.2.5 Landside development: Passenger terminal building and Terminal System, Design Considerations, apron-gate system, passenger processing, passenger amenities & baggage handling

4.2.2.6 Environment and aviation activities: aircraft noise, air quality in the vicinity of airports, global environment problem arising from airport use, water and soil pollution in the vicinity of airports

4.2.2.7 Land-use planning: assessing noise for land-use planning, risk of accident around airports

4.2.3 **Geometric Design of Aerodrome**

4.2.3.1 **Design of Runways:** Definitions, aerodrome reference code, factors affecting the sitting, orientation and number of runway, factors affecting length of runway, actual length of runways, Turning pad runways with stop-ways and clearways, Runway endsaftey area (RESA) take-off length requirement, landing length requirement, physical characteristics of:runways, runway shoulders, runway strips, clearways, stopways, obstacle limitation surfaces

4.2.3.2 **Design of taxiways, aprons and holding bays:** functional requirements, taxiway width, taxiway curves, junction and intersection, rapid exit taxiways, passenger terminal apron, cargo terminal apron, size of apron, isolated parking bay, need of holding bays and bypasses, types of bypass, size and location of holding bays

4.2.4 **Design of aerodrome pavement**

4.2.4.1 Procedure for pavement design [Aircraft Classification Number (ACN), Pavement Classification Number (PCN) method], USA practices: design of flexible and rigid pavements, (FAA's FAARFIELD method), pavement management system, airport pavement evaluation

4.2.5 **Visual Aids for Navigation**

4.2.5.1 Operational factors, operating requirements, runway, taxiway and apron marking and lighting, airport signs

4.2.6 **STOLPort and Heliport**

4.2.6.1 **STOLPort:** Physical CharacteristicsofSTOLPorts, importance of STOLPorts in the context of topography of Nepal and their role in the economic development of Nepal

4.2.6.2 **Heliport:** Physical Characteristics of Heliports. Obstacle Limitation Surfaces and Requirement

4.2.7 **Airport drainage**

4.2.7.1 Purpose, determination run-off (FAA method), typical drainage layout, sub-surface drainage

4.2.8 **Aerodrome Certification and Safety Management System**

4.2.8.1 Introduction to Aerodrome Certification.

4.2.8.2 ICAO and Nepal requirements on Certification of Aerodromes.

4.2.8.3 Audit and Inspection of Aerodromes for the Certification.

4.2.8.4 Introduction to State Safety Program (SSP) and Safety Management System (SMS)